As it is proposed to move the control of the ground level points and signals to a central position near to the turntable perhaps a few thoughts on how mechanical interlocking is achieved in prototype practice may be of interest.

From the early days it soon became obvious that grouping of point and signal levers together was desirable for ease of operation. The first mechanical frame with interlocked point and signal levers was brought into service at by the Midland railway at Kentish Town in 1860.

Early interlocking was mechanical but nowadays this is largely achieved electrically by means of relays. Interlocking may be defined as a means of ensuring that certain levers can not be moved when other levers are in certain positions. The three main objects of interlocking may be defined as follows:-

1. To ensure that the signalman cannot clear a signal unless the relevant points are set for the correct route.
2. To make it impossible to clear two signals at the same time which may lead to a collision between trains.
3. To make it impossible to move any points connected with or leading to the line on which the train is moving until the signal governing the movement of that train has been returned to danger.
In manual signal boxes the interlocking is achieved by tappets and rods working in a locking box mounted beneath the lever frame. In simple installations tappets take the form of horizontal flat bars which are connected to the levers below the floor of the signalbox. These slide in notches cut transversely in the locking box which also runs parallel to the lever frame. The locking box consists of a series of channels along which slide rods, known as bridle irons. To these the locks, generally blocks of metal with chamfered corners, are riveted and these engage with the notches in the tappets. The notches cut in the tappets are so arranged that they will only accept the locks, which are moved by the bridial irons, when the relevant lever is in the correct position.

The simplest form of locking (Fig 1) is that when one lever is pulled it locks another in the normal position, the original lever becoming back-locked. This is achieved by arranging that the locks are riveted to the bridle iron in such a position that the length over the working faces of the locks is equal to the distance between the two tappets plus the depth of one of the notches. This form of locking would be used between signals which would set up opposing movements, for example signals governing movements over a crossover or, on single lines, movements in the opposite direction. If several signals in each direction are involved further locks would be riveted to the same bridle iron so that the operation of any lever would automatically lock any opposing lever.
It is more common (Fig 2) for one or more levers needing to be reversed before a certain lever can be operated. In this case the notches in the tappets of the levers which have to be moved first are cut in the reverse position thus presenting a solid face to the lock in the normal position. Such locking would be found on distant signals which requires that all the home signal levers for the relevant route are pulled before the distant lever can be operated. This indicates to the driver that all the home signals for his route, operated from the same signalbox, are in the clear position. Conversely all the home signal levers are back-locked until the distant lever has been returned to danger.

In the case of levers operating facing points (Fig 3) the facing point lock lever has to lock the points in both the normal and reverse positions. The point tappet has to be notched in both the normal and reversed positions, the notches and the relevant locks being double chamfered. This is necessary so that the facing point lever locks the points in both positions. The relevant signal levers are locked both with the point lock lever and the relevant points.

If it is necessary for a lever to lock another lever only if a certain lever is reversed (Fig 4) a swinging tappet, narrower than a normal tappet by the depth of a notch, is used. This swinging tappet can swing to the right or left of its normal position by the depth of a notch. The lock bearing on one side of the swinging tappet is cut without a chamfer and it only locks the third lever if the first lever is operated with the lever that works the tappet is in the reversed position. This is known as conditional locking. For example, if a shunting signal covered a reversing movement over a crossover as well as a reversing movement along the main line it would not be necessary for this signal to be locked with the signal controlling movement over the crossover in the reverse direction with the crossover is in the normal position.

An interlocking ‘machine’ locking bed from the USA.